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REMARKS

The following is in response to the Office Action mailed on April 30, 2007. No new matter is added. Claims 1-29 are pending.

§103(a) Rejections:

Claims 1-3, 5-6, 12-19 and 22-28 are rejected as being unpatentable over Nakano (US Patent Publication No. 2002/0136122). This rejection is traversed.

Claim 1 is directed to an optical information recording medium that requires, among other features, first to Nth recording layers where at least one of the first to Nth recording layers has a correction information recording portion. The correction information recording portion contains correction information for correcting a laser beam intensity based on a change in a transmittance of the second to Nth recording layers between an unrecorded state and a recorded state. An advantage of these features is that since the correction information for correcting a laser beam intensity based on a change in a transmittance between an unrecorded state and a recorded state is recorded in a recording medium in advance. Thus, the stand-by time when activating the recording and reproducing apparatus or when recording user data can be reduced considerably.

Nakano does not teach or suggest these features. Nowhere does Nakano teach or suggest the correction information recording portion that stores correction information on at least any one of the recording layers of Nakano optical information recording medium. Moreover, nowhere does Nakano teach or suggest storing correction information for correcting a laser beam intensity based on a change in transmittance of the second to Nth recording layers between an unrecorded state and a recorded state onto the optical recording medium. As stated in the Amendment of February 5, 2007, Nakano is directed to an optical information recording medium that sets an optimum recording power P_o and the maximum levels I_{topE} of a return beam at the time of performing a test recording. Both the optimum recording power P_o and the maximum levels I_{topE} are stored temporarily into the memory of a recording and reproducing apparatus after performing the test recording. In order to compensate for the difference in laser beam transmittance between the case where first recording layer is in the recorded state and the case where it is in the unrecorded state, it is necessary to measure the level I_{topR} of the return beam

from the second recording layer in the case where the first recording layer is in the recorded state (see paragraphs [0056]-[0059] and [0093]). As a result, it is necessary to measure I_{topE} and I_{topR} every time the recording medium is replaced. Thus, Nakano does not contemplate storing correction information for correcting a laser beam intensity based on a change in a transmittance of the second to Nth recording layers between an unrecorded state and a recorded state into a buffer, let alone a correction information recording portion, as required by claim 1. Moreover, there is no motivation for modifying Nakano to meet the requirements of claim 1 as Nakano does not suggest reducing the stand-by time when activating the recording and reproducing apparatus or when recording data. For at least these reasons claim 1 is not unpatentable over Nakano. Claims 2, 3, 5-9 and 11 depend from claim 1 and should be allowable for at least the same reasons.

Claim 12 is directed to an optical recording and reproducing method for recording information on and reproducing information from an optical information recording medium that has first to Nth recording layers where at least one of the first to Nth recording layers has a correction information recording portion. The correction information recording portion contains correction information for correcting a laser beam intensity based on a change in a transmittance of the second to Nth recording layers between an unrecorded state and a recorded state.

Nakano does not teach or suggest these features. Nowhere does Nakano teach or suggest the correction information recording portion that stores correction information on at least any one of the recording layers of Nakano optical information recording medium. Moreover, nowhere does Nakano teach or suggest storing correction information for correcting a laser beam intensity based on a change in transmittance of the second to Nth recording layers between an unrecorded state and a recorded state onto the optical recording medium. As discussed above, Nakano is directed to an optical information recording medium that sets an optimum recording power P_o and the maximum levels I_{topE} of a return beam at the time of performing a test recording. Both the optimum recording power P_o and the maximum levels I_{topE} are stored temporarily into the memory of a recording and reproducing apparatus after performing the test recording. In order to compensate for the difference in laser beam transmittance between the case where first

recording layer is in the recorded state and the case where it is in the unrecorded state, it is necessary to measure the level I_{topR} of the return beam from the second recording layer in the case where the first recording layer is in the recorded state (see paragraphs [0056]-[0059] and [0093]). As a result, it is necessary to measure I_{topE} and I_{topR} every time the recording medium is replaced. Thus, Nakano does not contemplate storing correction information for correcting a laser beam intensity based on a change in a transmittance of the second to Nth recording layers between an unrecorded state and a recorded state into a buffer, let alone a correction information recording portion, as required by claim 12. Moreover, there is no motivation for modifying Nakano to meet the requirements of claim 12 as Nakano does not suggest reducing the stand-by time when activating the recording and reproducing apparatus or when recording data. For at least these reasons claim 12 is not unpatentable over Nakano. Claims 13-19 depend from claim 12 and should be allowable for at least the same reasons.

Claim 22 is directed to an optical recording and reproducing apparatus for recording information on and reproducing information from an optical information recording medium that has first to Nth recording layers where at least one of the first to Nth recording layers has a correction information recording portion. The correction information recording portion contains correction information for correcting a laser beam intensity based on a change in a transmittance of the second to Nth recording layers between an unrecorded state and a recorded state.

Nakano does not teach or suggest these features. Nowhere does Nakano teach or suggest the correction information recording portion that stores correction information on at least any one of the recording layers of Nakano optical information recording medium. Moreover, nowhere does Nakano teach or suggest storing correction information for correcting a laser beam intensity based on a change in transmittance of the second to Nth recording layers between an unrecorded state and a recorded state onto the optical recording medium. As discussed above, with respect to claims 1 and 12, Nakano is directed to an optical information recording medium that sets an optimum recording power P_o and the maximum levels I_{topE} of a return beam at the time of performing a test recording. Both the optimum recording power P_o and the maximum levels I_{topE} are stored temporarily into the memory of a recording and reproducing apparatus after performing

the test recording. In order to compensate for the difference in laser beam transmittance between the case where first recording layer is in the recorded state and the case where it is in the unrecorded state, it is necessary to measure the level I_{topR} of the return beam from the second recording layer in the case where the first recording layer is in the recorded state (see paragraphs [0056]-[0059] and [0093]). As a result, it is necessary to measure I_{topE} and I_{topR} every time the recording medium is replaced. Thus, Nakano does not contemplate storing correction information for correcting a laser beam intensity based on a change in a transmittance of the second to Nth recording layers between an unrecorded state and a recorded state into a buffer, let alone a correction information recording portion, as required by claim 22. Moreover, there is no motivation for modifying Nakano to meet the requirements of claim 22 as Nakano does not suggest reducing the stand-by time when activating the recording and reproducing apparatus or when recording data. For at least these reasons claim 22 is not unpatentable over Nakano. Claims 23-28 depend from claim 22 and should be allowable for at least the same reasons.

Claim 4 is rejected as being unpatentable over Nakano in view of Song (US Patent No. 7,054,240). This rejection is traversed. Claim 4 depends from claim 1 and should be allowable for at least the same reasons described above. Applicants do not concede the correctness of this rejection.

Claims 10, 11 and 29 are rejected as being unpatentable over Nakano in view of Furukawa (US Patent Publication No. 2003/0058771). This rejection is traversed. Claims 10 and 11 depend from claim 1 and should be allowable for at least the same reasons described above. Claim 29 depends from claim 22 and should be allowable for at least the same reasons as described above. Applicants do not concede the correctness of this rejection.

Claims 20 and 21 are rejected as being unpatentable over Heemskerk (US Publication No. 2003/0048733) in view of Nakano. This rejection is traversed.

Claim 20 is directed to an optical recording and reproducing method that requires, inter alia, determining a pulse condition by a test recording only for the recording layers in the order later than the recording layer corresponding to the recorded recording layer information and recording the new user data in the recording layers later than the recording layer corresponding to the recorded recording layer information.

The combination of Heemskerk and Nakano does not teach or suggest these features. The rejection relies on Nakano for teaching the step of determining a pulse condition by a test recording only for the recording layers in the order later than the recording layer corresponding to the recorded recording layer information. As discussed above, Nakano is directed to an optical information recording medium that sets an optimum recording power P_o, based on the optimum power of the recording laser beam in recording information on the n-th information recording layer in the case where the recording laser beam transmitting part of the first through (n-1)-th information recording layers is in the entirely unrecorded state, and the maximum level I_{topE}, based on the maximum level of a return beam when the recording laser beam transmitting part in the first through (n-1)-th information recording layer is entirely in the unrecorded state. The rejection appears to interpret P_o and I_{topE} as the pulse condition of claim 20. However, nowhere does Nakano suggest determining the P_o and I_{topE} by a test recording only for the recording layers in the order later than the recording layer corresponding to the recorded recording layer information, as required by claim 20. Heemskerk is silent about determining a pulse condition and therefore does not overcome the deficiencies of Nakano.

Moreover, there is no motivation to modify Heemskerk with Nakano. Heemskerk is directed to a method for recording on multi-layer phase-change optical discs. Heemskerk does include that areas on the first and second layers of the optical disc may be recorded according to a predefined sequence and storing de-ice addresses (see paragraph [0007]). However, nowhere does Heemskerk contemplate determining a pulse condition by a test recording only for the recording layers in the order later than the recording layer corresponding to the recorded recording layer information and recording the new user data in the recording layers later than the recording layer corresponding to the recorded recording layer information. For at least these reasons claim 20 is not

unpatentable over the combination of Heemskerk and Nakano and should be allowed. Claim 21 depends from claim 20 and should be allowable for at least the same reasons.

Conclusion:

Applicants respectfully assert claims 1-29 are now in condition for allowance In view of the above, early issuance of a notice of allowance is solicited. Any questions regarding this communication can be directed to the undersigned attorney, Curtis B. Hamre, Reg. No. 29,165 at (612) 455-3802.

Respectfully submitted,

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